

CRP genetic variants crucial in interpreting inflammatory disease activity

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CRP is commonly used as a serum marker for inflammation or infection, but the genetic effects of CRP variants on acute-phase serum CRP concentrations in patients with rheumatoid arthritis may be large enough to have a clinically relevant impact on the assessment of inflammatory disease activity, which in turn may influence therapeutic decision making. Furthermore, failure to take into account the potential for genetic effects may result in the inappropriate reassurance or under-treatment of patients simply because they carry low-CRP associated genetic variants. These are the results of a study by Timothy Vyse from Imperial College London, UK, and colleagues, and published in this week's *PLoS Medicine*.

The authors studied two independent sets of patients with [rheumatoid arthritis](#) (from the UK, and New Zealand and Australia). The authors used a genetic technique (a tagSNP approach) and linear modelling to show that common genetic variants at the CRP locus were associated with acute-phase serum CRP in both patient sets, translating into an approximate 3.5 fold change in expected serum CRP between carriers of two common CRP variants. For example when ESR = 50mm/hr the expected CRP serum level for one common CRP variant was 43.1mg/L and for another CRP variant was 14.2mg/L.

These findings raise questions about the interpretation of acute-phase serum CRP as they suggest that there is a significant association between CRP variants and acute-phase serum CRP concentrations in a group of patients with rheumatoid arthritis. CRP thresholds are used as a

diagnostic component of formal clinical algorithms and play an important role in a clinician's decision making process when diagnosing inflammatory disease and making treatment decisions. The authors conclude: "The accuracy and utility of these algorithms might be improved by using a genetically adjusted CRP measurement."

More information: Rhodes B, Merriman ME, Harrison A, Nissen MJ, Smith M, et al. (2010) A Genetic Association Study of Serum Acute-Phase C-Reactive Protein Levels in Rheumatoid Arthritis: Implications for Clinical Interpretation. PLoS Med 7(9): e1000341.
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